

*CLAIM AMENDMENTS*

1. (Currently Amended) A current supply circuit ~~(100)~~ providing an output current corresponding to digital data ~~(D0-D5)~~ of n bits (wherein n is an integer not less than 2), comprising:

a current driving device;

~~a current output node ~~(DL)~~ electrically connected with to a first power supply node ~~(11)~~ via a said current driving device ~~(23)~~ during current supply;~~

~~a current control circuit ~~(110)~~ provided between a second power supply node ~~(12)~~ and said current output node and receiving said digital data for controlling, corresponding to said the digital data, an amount of for controlling current on flowing in a current path established, including said current output node, between said the first and second power supply nodes during said the current supply; and~~

~~a voltage regulating circuit ~~(140, 150)~~ receiving said the digital data for forcing, after said the current supply starts, a change in voltage on said current output node based on said the digital data.~~

2. (Currently Amended) The current supply circuit according to claim 1, wherein said current driving device includes a field effect transistor ~~(23)~~ having a source and a drain electrically connected with said to the first power supply node ~~(11)~~ and said current output node ~~(DL)~~, respectively, and a gate, and the gate and drain of said field effect transistor are electrically connected during said the current supply.

3. (Currently Amended) The current supply circuit according to claim 1, wherein, during said the current supply, the voltage on said current output node ~~(DL)~~ settles to a steady voltage ~~(Vst)~~ corresponding to a level of said the output current depending on characteristics of said current driving device ~~(23)~~, and

~~said voltage regulating circuit ~~(140, 150)~~ exchanges electric charge with said current output node ~~(DL)~~ to move the voltage on said current output node closer to said the steady voltage depending on said the digital data ~~(D0-D5)~~.~~

4. (Currently Amended) The current supply circuit according to claim 1, wherein said voltage regulating circuit ~~(140, 150)~~ includes:

~~a precharge circuit ~~(140)~~ precharging, prior to supply of said the output current, said current output node ~~(DL)~~ to a predetermined voltage ~~(Vbf)~~; and~~

a precharge regulating circuit (150) exchanging, from initiation of ~~said the~~ current supply onward, electric charge corresponding to ~~said the~~ digital data (D0-D5) with said current output node.

5. (Currently Amended) The current supply circuit according to claim 4, wherein said precharge regulating circuit (150) includes n regulating units ~~provided~~ corresponding to the respective n bits (D0-D5) of ~~said the~~ digital data, and said n regulating units include:

~~n~~ respective ~~n~~ capacitors (C0-C5) charged by respective first to n-th voltages (V0-V5) prior to the supply of ~~said the~~ output current; and

~~n~~ respective ~~n~~ switching devices (170-175) provided between said ~~n~~ respective ~~n~~ capacitors and said current output node (DL), and each of said n switches turns on or off depending on one corresponding bit of ~~said the~~ digital data during ~~said the~~ current supply.

6. (Currently Amended) The current supply circuit according to claim 5, wherein, during ~~said the~~ current supply, the voltage on said current output node (DL) settles to a constant voltage (Vst) corresponding to a level of ~~said the~~ output current depending on characteristics of said current driving device (23), and

~~said the~~ predetermined voltage (Vbf), ~~said the~~ first to n-th voltages, (V0-V5) and capacitances (C0-C5) of said n capacitors are designed, for each of at least one of the combinations of the n bits of ~~said the~~ digital data, based on a conservation of charge that reflects ~~said the~~ constant voltage between before and after at least one of said n switching devices (170-175), corresponding to ~~said the~~ n bits, is turned on.

7. (Currently Amended) The current supply circuit according to claim 1, wherein said current control circuit (110) includes n constant-current supplies (120-125) ~~provided~~ corresponding to the respective n bits (D0-D5) of ~~said the~~ digital data and connected in parallel to said current output node (DL), and

said n constant-current supplies generate, corresponding to ~~said the~~ n respective ~~n~~ bits, first to n-th currents (I1, I2, I4, I8, I32) between ~~said the~~ second power supply node (12) and said current output node.

8. (Currently Amended) The current supply circuit according to claim 7, wherein ~~said the~~ first to n-th currents (I1, I2, I4, I8, I32) are set in gradations in a power of 2

corresponding to a predetermined ~~weighting~~ weighting of the n bits ~~(D0-D5)~~ of ~~said the~~ digital data.

9. (Currently Amended) A current supply circuit ~~(100#)~~ providing an output current corresponding to digital data ~~(D0-D5)~~ of n bits (wherein n is an integer not less than 2), comprising:

a current driving device;

a current output node ~~(DL)~~ electrically connected to a first power supply node ~~(11)~~ via ~~a~~ said current driving device ~~(23)~~ during current supply;

a current control circuit ~~(110)~~ provided between a second power supply node ~~(12)~~ and said current output node and receiving ~~said~~ digital data ~~for controlling~~, corresponding to ~~said~~ the digital data, ~~an amount of for controlling current on flowing in~~ a current path ~~established~~, including said current data line output node, between ~~said~~ the first and second power supply nodes during ~~said~~ the current supply; and

a voltage regulating circuit ~~(140, 150)~~ receiving ~~said~~ the digital data for moving, prior to ~~said~~ the current supply, a voltage on said current output node closer to a voltage corresponding to ~~said~~ the digital data.

10. (Currently Amended) The current supply circuit according to claim 9, wherein, during ~~said~~ the current supply, the voltage on said current output node ~~(DL)~~ settles to a steady voltage ~~(Vst)~~ corresponding to a level of ~~said~~ the output current depending on characteristics of said current driving device ~~(23)~~, and

~~said~~ voltage regulating circuit ~~(140, 150)~~ includes:

a precharge circuit ~~(140)~~ precharging, during a first period ~~(t0-ta)~~, said current output node to a predetermined voltage ~~(Vbf)~~; and

a precharge regulating circuit exchanging, during a second period ~~(ta-t1)~~, following ~~said~~ the first period, electric charge corresponding to ~~said~~ the digital data ~~(D0-D5)~~ with said current output node to move the voltage on said current output node ~~(DL)~~ closer to ~~said~~ the steady voltage.

11. (Currently Amended) A display device ~~(10)~~ performing producing a gray-scale display corresponding to image data ~~(D0-D5)~~ of n bits (wherein n is an integer not less than 2), comprising:

a current supply circuit ~~(100)~~ for supplying a display current corresponding to ~~said~~ the image data;

a plurality of pixel circuits (20), each pixel circuit including a current-driven light-emitting device (21) providing a brightness corresponding to a supplied current and a pixel driving circuit (22) for supplying said current-driven light-emitting device with a current corresponding to ~~said the~~ display current; and

a current data line (DL) for conveying ~~said the~~ display current, which is provided by said current supply circuit, to said plurality of pixel circuits, wherein

said pixel driving circuit has a current driving device (23) connected between said current data line and a first power supply node (11) during a predetermined period in which ~~said the~~ display current is conveyed thereto, and supplies said current-driven light-emitting device with a current corresponding to ~~said the~~ display current conveyed during the predetermined period, and

said current supply circuit includes:

a current control circuit (110) provided between a second power supply node (12) and said current data line and receiving ~~said the~~ image data for controlling, corresponding to ~~said the~~ image data, ~~an amount of current on flowing in~~ a current path ~~established~~, including said current data line, between said first and second power supply nodes during supply of said display current; and

a voltage regulating circuit (140, 150) receiving said image data for forcing, after supply of said display current starts, a change in voltage on said current data line based on said image data.

12. (Currently Amended) The display device according to claim 11, wherein said current control circuit (110) includes n constant-current supplies (120-125) ~~provided~~ corresponding to the n respective n bits (D0-D5) of ~~said the~~ image data and connected in parallel to said current data line, and

said n constant-current supplies generate first to n-th currents (I1, I2, I4, I8, I16, I32) on said current data line based on ~~said the~~ n respective n bits.

13. (Currently Amended) The display device according to claim 11, wherein, during the supply of ~~said the~~ display current, the voltage on said current data line (DL) settles to a steady voltage (Vst) corresponding to a level of ~~said the~~ display current depending on characteristics of said current driving device (23), and said voltage regulating circuit (140, 150) includes:

a precharge circuit (140) precharging, prior to the supply of ~~said the~~ display current, said current data line to a predetermined voltage (Vbf); and

a precharge regulating circuit (150) exchanging, from initiation of the supply of ~~said~~ the display current onward, electric charge corresponding to ~~said~~ the image data with said current data line to move the voltage on said current data line closer to ~~said~~ the steady current.

14. (Currently Amended) The display device according to claim 13, wherein said precharge regulating circuit (150) includes n precharge regulating units ~~provided~~ corresponding to the n respective n bits (D0-D5) of ~~said~~ the image data, and said n precharge regulating units include:

~~n~~ respective n capacitors (C0-C5) charged by respective first to n-th voltages ~~(V0-V5)~~ prior to the supply of ~~said~~ the display current; and

~~n~~ respective n switching devices (170-175) provided between said n respective n capacitors and said current data line (DL), and each of said n switches turns on or off depending on one corresponding bit of ~~said~~ the image data during the supply of ~~said~~ the display current.